We Claim:

1. A transpiration cooled heat sink comprising:

a heat sink base structure, said heat sink base structure having a coolant inlet for receiving a coolant and a coolant outlet for distributing a coolant, wherein said heat sink base structure defines at least one coolant channel disposed so as to be communicated with said coolant inlet and said coolant outlet; and

a coolant distribution structure, wherein said coolant distribution structure defines at least one distribution cavity and includes at least one distribution inlet communicated with said distribution cavity and wherein said coolant distribution structure is disposed relative to said heat sink base structure such that said distribution inlet is communicated with said coolant outlet.

2. A transpiration cooled heat sink according to claim 1, wherein said coolant distribution structure further includes at least one distribution member, wherein said distribution cavity is disposed within said distribution member.

3. A transpiration cooled heat sink according to claim 1, wherein said coolant distribution structure is constructed of a porous material.

4. A transpiration cooled heat sink according to claim 1, wherein said heat sink base is constructed from copper.

5. A transpiration cooled heat sink according to claim 1, further comprising a distribution outlet communicated with said distribution cavity, a heat transfer surface and a module attachment structure, wherein said module attachment structure defines a plurality of module channels and wherein said heat transfer surface is nonmovably associated with said module attachment structure.

6. A transpiration cooled heat sink according to claim 5, wherein said heat transfer surface is disposed relative to said module attachment structure so as to be communicated with said distribution outlet and said plurality of module channels.

7. A transpiration cooled heat sink according to claim 5, further comprising a coolant distribution device disposed within said plurality of module channels so as to be communicated with said distribution outlet and said heat transfer surface.

8. A transpiration cooled heat sink according to claim 7, wherein said coolant distribution device is constructed of a wicking material.

9. A transpiration cooled heat sink according to claim 7, wherein said coolant distribution device is cotton string.

10. A transpiration cooled heat sink according to claim 5, wherein said heat transfer surface is constructed of porous material.

11. A transpiration cooled heat sink according to claim 5, wherein said heat transfer surface is constructed of copper.

12. A transpiration cooled heat sink according to claim 5, wherein said module attachment structure is constructed from copper.

13. A self contained coolant supply for a transpiration cooled heat sink comprising:

a coolant production apparatus, said coolant production apparatus having an airflow inlet for receiving an airflow, an airflow outlet for discharging said airflow, a dehumidification unit for extracting a coolant from said airflow and a product outlet for discharging said coolant; and

a coolant storage structure, wherein said coolant storage structure defines a storage cavity for containing said coolant and includes a storage inlet and a storage outlet, wherein said storage inlet is communicated with said storage cavity and said coolant outlet and wherein said storage outlet is communicated with said storage cavity and a transpiration cooled heat sink.

14. A self contained coolant supply for a transpiration cooled heat sink according to claim 13, further comprising a coolant level measuring device disposed so as to be communicated with said storage cavity.

15. A self contained coolant supply for a transpiration cooled heat sink according to claim 13, further comprising a pumping device disposed so as to be communicated in series fashion with said storage outlet and said transpiration cooled heat sink.

16. A self contained coolant supply for a transpiration cooled heat sink according to claim 15, wherein said pumping device is a centrifugal pump.

17. A self contained coolant supply for a transpiration cooled heat sink according to claim 13, wherein said dehumidification unit includes a control device communicated with a power source.

18. A self contained coolant supply for a transpiration cooled heat sink according to claim 13, wherein said dehumidification unit is disposed within said coolant production apparatus so as to be communicated with said airflow inlet.

19. A method for using a transpiration cooled heat sink and a self contained coolant supply for a transpiration cooled heat sink comprising:

obtaining a transpiration cooled heat sink having a coolant inlet, a self contained coolant supply for a transpiration cooled heat sink having a dehumidification unit, a coolant storage structure and a storage outlet and an electronic system which includes at least one electronic device having a device outer surface;

positioning said self contained coolant supply within said electronic system so as to receive an airflow;

attaching said transpiration cooled heat sink to said electronic device so as to communicate said transpiration cooled heat sink with said device outer surface;

communicating said coolant inlet with said storage outlet; and

operating said self contained coolant supply so as to produce said coolant.

20. A method according to claim 19, wherein said attaching said transpiration cooled heat sink to said electronic device includes attaching said transpiration cooled heat sink to said electronic device using clips.

21. A method according to claim 19, wherein said operating said self contained coolant supply so as to produce said coolant includes operating said dehumidification unit so as to extract a coolant from said airflow and storing said coolant within said coolant storage structure.

22. A method according to claim 19, wherein said obtaining a transpiration cooled heat sink includes obtaining a self contained coolant supply for a transpiration cooled heat sink having a coolant pump disposed so as to communicate said coolant inlet with said storage outlet.

23. A method according to claim 22, wherein said operating said self contained coolant supply so as to produce said coolant includes operating said coolant pump so as to cause said coolant to flow from said storage outlet to said coolant inlet.